



Memorandum of Understanding

Installation of Lightning Detection System, Monitoring and Investigations on Lightning Phenomena and its associated processes at Collaborating Institutes

Between

National Remote Sensing Centre
ISRO, Department of Space, Govt. Of India
Balanagar, Hyderabad-500037

And



BUNDELKHAND UNIVERSITY (BU),
JHANSI-284128, UTTAR PRADESH

Signed on : 26 August 2022

Memorandum of Understanding

Installation of Lightning Detection System, Monitoring and Investigations on Lightning Phenomena and its associated processes at Collaborating Institutes

This Memorandum of Understanding (hereinafter called the "MoU") is made on the 26th day of August 2022, between the National Remote Sensing Centre (NRSC), Indian Space Research Organisation (ISRO), Department of Space, Government of India (hereinafter called the 'NRSC') as the 1st party and Bundelkhand University (BU), JHANSI-284128, Uttar Pradesh as the 2nd party.

NOW THEREFORE, the parties hereto hereby agree as follows:

1 Preamble

(i) National Remote Sensing Centre (NRSC)

National Remote Sensing Centre (NRSC) is one of the primary centers of Indian Space Research Organization (ISRO), Department of Space (DOS), Govt. of India. NRSC has the mandate for establishment of ground stations for receiving satellite data, generation of data products, dissemination to the users, and development of techniques for remote sensing applications including disaster management support, geospatial services for good governance and capacity building for professionals, faculty and students.

(ii) Introduction : (Second Party) – BUNDELKHAND UNIVERSITY, JHANSI

This seat of higher learning came into existence on August 26, 1975, vide Government of Uttar Pradesh Notification No. 10/15-60/74 under the provision of the U.P. Universities Act. However, though belonging to the younger generation of the Indian Universities, the Bundelkhand University has fast transformed into a University of excellence offering opportunities to the aspiring youths to pursue higher education, applied research and Professional training according to their aptitude and potential.

Our Mission - To impart quality vocational and scientific education through basic and applied research, to improve the quality and value of human irrespective of gender, caste, nationality and religion

The University aims to become a world-class institution by tapping human potential to lead the country in changing national, regional and global scenario. The university got assessed and accredited three times by the National Assessment and Accreditation Council in 2005, 2011 and 2017. It has also been recognized Number one State University consecutively three

times by the Government of Uttar Pradesh for its professionally viable courses, regularity of academic calendar and huge infra-structures. The system of admission and examination is completely automated and the Course Curriculum is upgraded at par A grade educational institutions.

The Bundelkhand University is the foremost in playing a leading role by initiating study and research program in collaboration with other Indian and Foreign Institutes.

Bundelkhand University is the only university of Uttar Pradesh selected for the Funding under UGC - STRIDE-1 for the Research Capacity Building and Human Resource Development Programme. The University has not only added life to the lives of the people of Jhansi but has become an epitome of academic, social, technical and cultural development of the region.

(i) Reference to Earlier MOU, if any

(ii) Purpose/Need for MOU

To expand LDS network with the active support from BUNDELKHAND UNIVERSITY, JHANSI, in terms of installations of LDS system at, collection of data, maintenance of the LDS system, dissemination of the data to NRSC and utilization of the lightning data for scientific use.

(iii) Parties involved in MOU

First party (NRSC)

National Remote Sensing Centre,
ISRO, Dept. of Space, Govt. of India
Balanagar, Hyderabad-500037

Second Party

Bundelkhand University (BU), JHANSI-284128, Uttar Pradesh.

2. Authorised signatories

First Party

Deputy Director
Earth & Climate Sciences Area (ECSA)
National Remote Sensing Centre (NRSC)
Balanagar, Hyderabad 500 037

Second Party

Registrar
Bundelkhand University (BU),
JHANSI-284128, Uttar Pradesh
Phone No.:+91510-2320496

MOU between NRSC and BU, JHANSI

3 Functionaries and Contact Details

First Party : NRSC

S. No	Name	Contact address	Telephone / Fax	e-mail
1	Dr. Alok Taori	Earth & Climate Sciences Area, NRSC, Hyderabad-500037	7382685983	alok_taori@nrsc.gov.in
2	Dr.Ch. V. Chiranjivi Jayaram	Regional Remote Sensing Centre – East, NRSC,Plot No: BG-2, AA-1B, New Town, Kolkata – 700156	8583039252	chvchiranjivi@hotmail.com

Second Party : BU, JHANSI

S. No	Name	Contact address	Telephone / Fax	e-mail
1	Dr. AMIT PAL	Institute of Environment & Development Studies, Bundelkhand University (BU), JHANSI-284128, Uttar Pradesh	7985338047 / 0510-2320761	apu13@rediffmail.com
2	Dr. SMRITI TRIPATHI	Institute of Environment & Development Studies, Bundelkhand University (BU), JHANSI-284128, Uttar Pradesh	9451938273 / 0510-2320761	smritienvs@gmail.com

4 Date of Signing, Effective Date and Duration of MOU

Date of signing: The date of signing in MOU shall be the date on when both parties sign the document.

Effective date: The effective date of MOU is the date of signing the MoU or from the date the funds are transferred to the BU, JHANSI, whichever is later.

Duration of MoU: MOU is valid for 5 Years. MOU shall be extended further with mutual agreement.

5 **Scope of Work**

The scope of overall project is to study the atmospheric lightning and its associated phenomena. However, the scope of present MOU is for collaboration for data collection, analysis and raw data dissemination to NRSC from the LDS instrumentation installed at BUNDELKHAND UNIVERSITY, JHANSI, location.

6 **Methodology**

- Operationalization of LDS with automated data recording.
- Transfer of data to NRSC using the static IP for the LDS computer system.
- Archiving and analysis of diurnal, seasonal and inter seasonal cycles of lightning data

7 **Deliverables & Specifications**

Second party will deliver the following to First Party

- Maintain the installed LDS in functional condition.
- Data base of lightning occurrences with their classifications.
- Data transfer to NRSC.

8 **Data Holding**

- NRSC will receive and hold the data.
- The 2nd party acquires and carries out near real time data analysis.
- The 2nd party transfers real time data and products to the first party.

9 **Applicable documents**

Project Proposal / Standard Operating Procedure (SOP)

10 **Guidelines on data / Map security**

- Approval of competent authority of NRSC is required for sharing data with 3rd party.

11 **Responsibilities**

First party : NRSC

- NRSC will ensure the LDS system supplied are technically suitable.
- Developing technique for now-casting of lightning occurrences.

Second party : BU, JHANSI,

- Regular monitoring on the functioning of LDS unit and report to the first part on any short coming.

MOU between NRSC and BU, JHANSI

- Maintenance of the LDS and power supply with UPS for the above project work.
- Providing a static IP for the LDS system operational computer.
- Extend logistics to NRSC scientists during the maintenance, inter-sensor calibrations etc.
- Submit half yearly utilization certificate (April to September and October to March) for funds provided by NRSC with justifications

12 Activity Schedule

- LDS installation & Configuration of LDS units
- Data collection, storage/ archival & transfer of data
- Regular monitoring of the LDS unit
- Reporting the short comings, if any
- Participation in capacity building and outreach activities..

13 Consideration and Schedule of prices

A lump sum of Rs.1.0 Lakh /Year shall be funded by NRSC to the BU, JHANSI,

14 Funding Terms and Conditions of Payment

On signing of MOU, lump-sum of Rs.1.0 Lakh /Year shall be funded by NRSC to the BU, JHANSI, subjected to the allocation and availability of funds for this research activity at NRSC /ISRO:

15 Training

Suitable training towards the equipment maintenance, operation will be provided to the identified persons of the 2nd party by the 1st party.

16 Warranty

The warranty of the equipment will be covered by NRSC.

17 Project Monitoring

Monthly monitoring of the project activities will be carried out internal project monitoring mechanism at NRSC and also at BU, JHANSI.

18 Confidentiality

"All information and documents to be exchanged pursuant to the Memorandum of Understanding will be kept confidential by the Parties and will be used subject to such terms as each Party may specify. The Parties will not use the information for purposes

other than that specified, without the prior written consent of the other Party.

All the parties will maintain utmost confidentiality in data sharing. Both partners undertake, during the tenure of the MOU and thereafter, on their behalf and on behalf of their employees/representatives/associates to maintain strict confidentiality and prevent disclosure thereof all the information and data exchange/ generated pertaining to work, under this agreement/MOU. However the data can be published and shared jointly for scientific publication with mutual written consent of both the parties

All Confidential Information shall remain the exclusive property of the disclosing Party. The Parties agree that this MoU and the disclosure of the confidential information do not grant or imply any license or interest or right to the Recipient in respect to any intellectual property right of the other Party.

Unpublished information, whether oral, in writing or otherwise, discovered or conceived by the scientists or technicians and exchanged under the provisions of this MoU will not be transmitted to a third party, unless otherwise agreed by the Parties in writing.

19 Intellectual Property Rights

The original information, the methodology adopted, original data, derived data, the originals of any reports and documents or materials prepared or inventions or information produced as a result of the services and all intellectual property rights therein, unless otherwise specifically stated in the MoU, shall be and shall remain property of the parties in agreement.

The procedural formalities for securing and maintaining the intellectual property rights (patents/trademarks/copyright) if any, shall be the responsibilities of BU, JHANSI, and NRSC and the expenditure incurred thereof shall be borne by each party equally, consistent with laws, rules and regulations of India. The question of whether or not the intellectual property rights should be secured and the territory where these shall be secured will be decided by the Director, NRSC and Head of the Institute of BU, JHANSI, and NRSC shall have to consult each other to commercially exploit/ use the intellectual property generated in the Project with mutual written consent. In such an event, the fee and royalty and other terms and conditions for the commercial exploitation/ use of the aid intellectual property created in the project shall be decided based on mutual understanding / discussion for which a separate agreement shall be entered into.

During the work envisaged under the agreement in the event of NRSC, ISRO Scientist exploring, inventing or discovering results other than the specific objectives of the project, NRSC, ISRO and BU, JHANSI, shall retain equal undivided rights on such results.

The Parties shall not assign any rights and obligations arising out of the IPR generated through inventions/activities carried out under the MOU to any third party without prior written consent of the other party.

In case research is carried out solely and separately by the party or the research results are

obtained through the sole and separate effort of the party, the party concerned alone will apply for grant of IPR and once granted, the IPR will be solely owned by the parties concerned.

In case of research results obtained through joint activities, the grant of intellectual property rights will be sought by both parties jointly and once granted these rights will jointly owned by the Parties.

For all the data provided by the one of the parties, all responsibility and rights shall rest with that party only.

The Intellectual property that is mentioned in various statutes to protect (know-how/process/design/technique/ copyrights) generated in the project executed shall be owned by the respective parties depending on their respective contributions. Wherever, any of the above work executed in a collaborative way, the extent of the ownership shall be decided mutually, depending on the relative inputs (intellectual/ technical/ financial/physical) made by the parties here to the project.

All disputes concerning intellectual property rights and other commercial rights arising out of any activities performed under this MOU or agreement related thereto shall be settled through mutual deliberations in terms of applicable laws.

BU, JHANSI, and NRSC are the joint holders of intellectual property like derived data, documents generated etc. Methodology developed by NRSC under this MOU is the IPR of NRSC only. However BU, JHANSI, will be allowed to use the methodology so developed in future for implementation of the project with due consent of NRSC.

Protection of Intellectual Property :

Each Party will ensure appropriate protection of intellectual property rights generated from cooperation pursuant to MOU, consistent with laws, rules and regulations of India.

20 Commercialization

In case of research results obtained through joint activities under this MOU concerned Parties will apply as co-applicants for the protection of intellectual property rights in India. Commercialization in any other country shall be done jointly through a separate agreement.

21 Publication

Any Publication, document and/or paper arising out of joint work conducted by the parties on to this MOU will be jointly owned. The publications (research papers, reports etc.,) shall be in the names of research workers, wherein it will be duly acknowledged that the work has been carried out under collaborative programs between the parties. However, the data can be published and shared jointly for scientific publication with mutual consent of both

the parties involved in the respective projects. The use of the name, logo and/or official emblem of the parties on any publication, document and/or paper will require prior permission of both the parties. It may however be ensured that the official emblem and logo is not misused.

Notwithstanding anything contained in this agreement/MOU or any document related thereto, all the differences or disputes including publication related disputes concerning intellectual property rights arising out any activities performed under this agreement/MOU shall be settled through mutual deliberations or procedures established under applicable laws and Rules made there under.

22 Modifications to MOU

The project is designed and formulated after detailed discussion. However if any change in scope of work or modifications w.r.t to duration of MOU / Technical issues / deliverables etc required, it will be done through mutual written consent from concerned parties and treated as amended to this MOU. The modification / changes shall be effective from the date on which they are made, unless otherwise agreed upon.

23 Governing Law

This MOU is hereby concluded in terms of understanding of the parties about the law of MOU and intended to regulate by relevant applicable Indian laws, policy and conventions.

24 Force Majeure

Neither party shall be held responsible for non-fulfilment of their respective obligations under the agreement due to the exigency of one or more of the unforeseen events such as but not limited to Acts of God, war, flood, earthquake, strike, lockouts, epidemics, riots, civil commotion etc. provided on the occurrence and cessation of any such events, the party affected thereby shall give a notice in writing to other party within one month of such occurrence or cessation. If the force-majeure conditions continue beyond six months, the parties shall then mutually decide about the future course of action.

25 Indemnity

Either Party ("Indemnifying Party") shall indemnify and keep indemnified the other Party ("Indemnified Party") against any and all claims, direct losses, injuries, liabilities, reasonable costs and expenses, direct damages, actions or proceedings which may be made or taken against the Indemnified Party by any person arising out of any breach, action or inaction of the Indemnifying Party under this agreement. In no event whatsoever, the Indemnifying Party shall be liable to the Indemnified Party for any loss of

revenue, loss of profits, rights or services, incidental, indirect or consequential damages arising from or related to this agreement.

26 Dispute Settlement Mechanism

In case of any dispute or difference of opinion or interpretation of the MOU arising out of the activities performed under the provisions of this contract or related document not amicably resolved completely by mutual discussion or consultation between the parties within thirty days (30), the entire matter shall be referred to the Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD) for settlement of any such commercial disputes and the procedure mentioned in the Office Memorandum Dated 22nd May, 2018 and others OM subsequently issued by Department of Public Enterprises, Ministry of Heavy Industries & Public Enterprises shall apply in consonance with applicable Indian laws and public policy.

Notwithstanding anything contained in above para, in case of any dispute or difference of opinion falling under the exception to the ambit of Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD) the party to this contract/agreement/MOU with mutual consent may take recourse of any alternative dispute settlement mechanism including arbitration for settlement of such disputes as per applicable law and procedure.

Pending the submission of and / or decision on a dispute, difference or claim or until the arbitral award is published; the parties shall continue to perform all of their obligations under this MOU without prejudice to a final adjustment in accordance with such award

27 Jurisdiction

Any dispute arising out of the implementation or interpretation of any provisions of this MOU shall be subject to the jurisdiction of Hyderabad court.

28 Termination: (for Cause, Convenience, and Force Majeure)

On completion of MOU duration, as stated in the clause No. 4, the MOU ceases to exist. During the tenure of the agreement, either Party may terminate and nullify this Agreement/MOU by providing prior written notice of 30days to the other party for any of the reasons – Cause/convenience/Force Majeure.

- Termination for Convenience: For convenience without assigning any reason.
- Termination for Cause: For the breach of any obligations/responsibilities/conditions of this agreement by the other party, with an opportunity to cure/rectify such a situation within thirty (30) days to the defaulting party and no remedial action is taken to the satisfaction of the aggrieved party.
- Termination for Force Majeure: in the event of "Force Majeure"

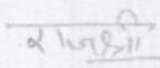

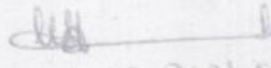
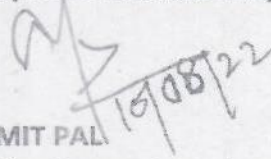
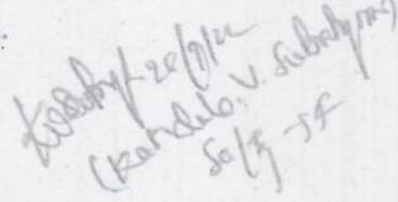
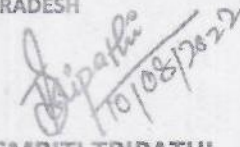
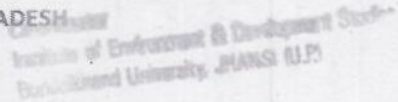
- **Obligations upon Termination**

Following termination or expiration of this Agreement, in addition to any other obligations existing hereunder or otherwise at law or in equity:

- The rights and obligations of the parties thereto shall be settled by mutual discussion; the financial settlement if any shall take into consideration not only the expenditure incurred but also the expenditure committed by the parties hereto.
- The agreement arrived at between the parties hereto for the utilization of the intellectual property (defined in clause #19.0) shall survive the termination of the agreement.

MOU between NRSC and BU, JHANSI

IN WITNESS WHEREOF, the Parties hereto have caused this MoU to be signed in their respective names on this ___ day of August, 2022 on which day it comes into force, copy of the same shall be made in two originals, one retained by each party.

First Party	Second Party
For and on behalf of Deputy Director Earth and Climate Sciences Area (ECSA) NRSC, Hyderabad	For and on behalf of Registrar BUNDELKHAND UNIVERSITY, JHANSI
Signature  26/9/22 श्री. राजश्री वि. बोथले / Dr. Rajashree V Bothale उप निदेशक, ईसीएसए / Deputy Director, ECSA पृथ्वी एवं प्रसन्नानु विज्ञान क्षेत्र (ईसीएसए) Earth & Climate Sciences Area (ECSA) राष्ट्रीय दूरदर्शन केंद्र (एनएससी) National Remote Sensing Centre (NRSC) भारतीय अंतरिक्ष अनुसंधान केंद्र (इसरो) Indian Space Research Organisation (ISRO) अंतरिक्ष विभाग, भारत सरकार / Dept. of Space, Govt. of India बालासागर, हैदराबाद, तेलंगणा-37 / Balasagar, Hyderabad, Telangana - 37	Signature  कुलसचिव बुन्देलखण्ड विश्वविद्यालय जहान्सी
Seal श्री. राजश्री वि. बोथले / Dr. Rajashree V Bothale उप निदेशक, ईसीएसए / Deputy Director, ECSA पृथ्वी एवं प्रसन्नानु विज्ञान क्षेत्र (ईसीएसए) Earth & Climate Sciences Area (ECSA) राष्ट्रीय दूरदर्शन केंद्र (एनएससी) National Remote Sensing Centre (NRSC) भारतीय अंतरिक्ष अनुसंधान केंद्र (इसरो) Indian Space Research Organisation (ISRO) अंतरिक्ष विभाग, भारत सरकार / Dept. of Space, Govt. of India बालासागर, हैदराबाद, तेलंगणा-37 / Balasagar, Hyderabad, Telangana - 37	Seal
Witness (Name and Address)	Witness (Name and Address)
1.  (CHARREEF BABI SHAIK) SG/OAG SF	1. Dr. AMIT PAL  Institute of Environment & Development Studies Bundelkhand University, JHANSI - 284128 UTTAR PRADESH
2.  (Karan Dubey, V. Subodh Singh) SG/OAG SF	2. Dr. SMRITI TRIPATHI  Institute of Environment & Development Studies Bundelkhand University, JHANSI - 284128 UTTAR PRADESH 
Date: _____	Date: _____